

#### **What is Claimed is:**

1. A method of treating a patient for diabetes comprising: administering a therapeutically effective amount of a compound selected from the group consisting of: oxidized all-trans retinoic acid; oxidized 9-cis retinoic acid; and reduced 4-oxo-retinoic acid.
2. The method of claim 1, wherein said compound is administered in combination with insulin.
3. The method of claim 1, wherein said compound is administered to said patient at a daily dose of between 0.1 mg and 100 mg.
4. The method of claim 1, wherein said compound is oxidized all-trans retinoic acid.
5. The method of claim 1, wherein said compound is oxidized 9-cis retinoic acid.
6. The method of claim 1, wherein said compound is reduced 4-oxo-retinoic acid.
7. A method of treating a patient for being underweight comprising: administering to said patient a therapeutically effective amount of a compound selected from the group consisting of: oxidized all-trans retinoic acid; oxidized 9-cis retinoic acid; and reduced 4-oxo-retinoic acid.
8. The method of claim 7, wherein said compound is administered to said patient at a daily dose of between 0.1 mg and 100 mg.
9. The method of claim 7, wherein said compound is oxidized all-trans retinoic acid.
10. The method of claim 7, wherein said compound is oxidized 9-cis retinoic acid.
11. The method of claim 7, wherein said compound is reduced 4-oxo-retinoic acid.

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12. A method of treating a patient for atherosclerosis comprising: administering a therapeutically effective amount of a compound selected from the group consisting of: oxidized all-trans retinoic acid; oxidized 9-cis retinoic acid; and reduced 4-oxo-retinoic acid.

13. The method of claims 12, wherein said compound is administered to said patient at a daily dose of between 0.1 mg and 100 mg.

14. The method of claim 12, wherein said compound is oxidized all-trans retinoic acid.

15. The method of claim 12, wherein said compound is oxidized 9-cis retinoic acid.

16. The method of claim 12, wherein said compound is reduced 4-oxo-retinoic acid.

17. A method of treating a patient for cancer comprising: administering a therapeutically effective amount of a compound selected from the group consisting of: oxidized all-trans retinoic acid; oxidized 9-cis retinoic acid; and reduced 4-oxo-retinoic acid.

18. The method of claim 17, wherein said cancer is breast cancer; lung cancer; or a liposarcoma.

19. The method of claim 17, wherein said compound is administered to said patient at a daily dose of between 0.1 mg and 100 mg.

20. The method of claim 17, wherein said compound is oxidized all-trans retinoic acid.

21. The method of claim 17, wherein said compound is oxidized 9-cis retinoic acid.

22. The method of claim 17, wherein said compound is reduced 4-oxo-retinoic acid.

23. A method of assaying a test compound for its ability to bind to the human PPAR-gamma receptor, comprising:  
a) incubating recombinant PPAR-gamma binding domain with said test compound and with a ligand selected from the group consisting of:

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oxidized all-trans retinoic acid; oxidized 9-cis retinoic acid; and  
reduced 4-oxo-retinoic acid; and

b) determining the extent to which the binding of said ligand is displaced by said  
test compound.

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